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Paper Title:	Biomechanical Analysis of the Influence of Prosthesis Installation Parameters on Soft Tissue Tension in Elbow Joint Replacement
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#### Abstract

Elbow joint replacement is an important method to restore elbow joint function of patients with severe elbow injuries. The installation parameters of the prosthesis greatly affect the capacity of the elbow joint, and the service life of the prosthesis. This article provides a reference for planning the installation position of the prosthesis by analyzing the impact of prosthesis installation parameters on related muscle forces. First, a biomechanical model including the humerus, ulna, and related muscles is established. Secondly, the elbow joint replacement surgery is simulated, and a skeletal-prosthesis-muscle combined simulation model is created. Finally, by simulating the deviation of the hinge center of the humeral prosthesis from the ideal center within the range of surgical error in actual operations, the muscle forces are calculated and the impact of prosthesis installation parameters on muscle forces is analyzed. The simulation results demonstrate the effects of minor misalignment during installation to the muscle forces and joint reaction forces, providing quantitative references for surgical planning.

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